REMARKS

Claim 1, as well as paragraphs [0041] and [0042] have been amended to claim only those cupric compound formed from anions known to produce insoluble or slightly soluble compounds with the remaining anions from the original Markush group being moved to new claim 31.

Claim 9 has been amended to clarify the formation of the colloidal particles may include the formation of a basic salt of a "soluble" cupric compound as illustrated in Example 8.

Claims 3 and 11 have been amended to recite more specifically the actions included in the purification step.

Claim 26 has been amended to clarify that the claimed cupric compound will be insoluble or only slightly soluble and to distinguish the recited formula, *i.e.*, formula III, from formula I as recited in claims 1 and 9 and paragraph [0042] has been amended to reflect the use of this alternative formula.

As noted above, claim 31 separates out the nominally "soluble" anions from claim 1 and makes clear that the colloidal solid is actually the basic salt of the cupric compound formed with one or more of the specified anions as illustrated in Example 8. The Applicants respectfully contend that no question of new matter arises as a result of these amendments and entry is respectfully requested.

Claim 31 having been added and no claims having been cancelled by this amendment, the Applicants respectfully submit that claims 1-17, 19, 21 and 23-31 remain before the Examiner for consideration in this application.

The Applicants note with appreciation the Examiner's participation in a personal interview with the undersigned on November 12, 2003, and the comments and suggestions provided therein. The Applicants respectfully submit that the present amendments to the claims and specification reflect the substance of the interview with respect to the particular cupric compounds that the Applicants are intending to claim.

As noted above, paragraph [0041] has been amended to reflect the language presented in claim 26 with respect to a formulaic representation of the cupric compounds being claimed. As noted during the interview, the compounds encompassed by formula I, *i.e.*, CuA_xB_y, does not cover certain of the exemplary compounds, *e.g.*, cupric citrate of Example 8, if the values of x and y are restricted to integers. Although the Applicants respectfully maintain that there is nothing inherently improper with the use of fractional subscripts, they do acknowledge that such usage may be confusing for those not accustomed to such usage.

The Applicants respectfully contend that the formula III, $Cu_zA_xB_y$, as now recited in claims 26 and 31 and paragraph [0041], is both consistent with the original disclosure and reflects a somewhat more conventional representation of the structure of the cupric compounds encompassed by the claims. The Applicants further suggest that formula I is equivalent to formula III in which the Cu subscript, *i.e.*, z, is limited to 1. The Applicants

respectfully contend that formula III encompasses both $Cu(OH)_2$ (Example 6), z=1, and Cu_2(OH)citrate (Example 8), z=2, with the formula III subscripts simply corresponding to the integers used in the conventional formulaic representation of the particular cupric compound(s). The Applicants respectfully submit, therefore, that formula III is fully supported by and consistent with the original disclosure and contend that the amendments indicated above do not constitute the introduction of new matter.

Rejections Under 35 U.S.C. § 112, first paragraph

Claims 1-17, 19, 21 and 23-30 stand rejected under 35 U.S.C. § 112, first paragraph, as not being enabled for anions that would result in a "soluble" cupric compound. The Applicants respectfully traverse this rejection for the reasons detailed below.

The Applicants respectfully submit that, contrary to the assertion, Action at 3, Example 8 of the specification provides a working example with two ionic species, specifically the citrate and hydroxy ions, suitable for forming a stable colloid of the basic salt $Cu_2(OH)(C_6H_5O_7)$ of the cupric citrate rather than pure cupric citrate $Cu_2C_6H_4O_7 \cdot 2½ H_2O$. The Applicants respectfully contend that the solubility of the basic salts of the "soluble" cupric compounds may be easily determined and that one of ordinary skill in the art would not have to conduct "undue" experimentation to determine if a particular anion could be incorporated in an insoluble cupric compound or the insoluble basic salt of a soluble cupric compound.

Claims 1-8, 17, 19, 21, 28 and 29 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to convey the scope of the invention with regard to identified language

in the various claims. The Applicants respectfully traverse this rejection for the following reasons.

With respect to claims 1-8, 17, 19 and 21, the Applicant respectfully submits that, as amended above, the claims make clear that the stability of the colloid refers to the stability within the original aqueous solution that is substantially free of organic solvents and that the addition of the organic solvent produces an organic solution in which the stability of the colloid is reduced.

With respect to claims 26-30, the Applicants respectfully submit that the amendments above make clear that the coefficients x and y are not greater than 2.

With respect to claims 28 and 29, the Applicants respectfully direct the Examiner's attention to paragraph [0043], in which both ozone and hypochlorites are included as possible oxidizers and contend that these claims are, therefore, supported by the disclosure as filed.

With respect to claim 29, the Applicants respectfully direct the Examiner's attention to paragraph [0047] in which ammonia, sodium carbonate, sodium bicarbonate, and lime are provided as examples of weak bases suitable for increasing the pH of the solution to about 5 and contend, therefore, that this claim is supported by the disclosure as filed.

The Applicants respectfully request, therefore, that these rejections be withdrawn.

Rejections Under 35 U.S.C. § 112, second paragraph

Claims 1-8, 17, 19, 21 and 26-30 stand rejected under 35 U.S.C. § 112, second paragraph, as indefinite for various reasons. The Applicants respectfully traverse this rejection for the reasons detailed below.

As amended above, the Applicants respectfully submit that claims 1-8, 17, 19 and 21 more clearly recite a property of a stable colloid, *i.e.*, that the colloidal particles remain suspended indefinitely.

With respect to claims 26-30, the Applicants respectfully contend that as reflected above, paragraph [0041] has been amended to reflect the language presented in claim 26 with respect to a formulaic representation of the cupric compounds being claimed. As noted during the interview, the compounds encompassed by formula I, *i.e.*, CuA_xB_y, does not cover certain of the exemplary compounds, *e.g.*, cupric citrate of Example 8, only if the values of x and y are restricted to integers. Although the Applicants respectfully maintain that there is nothing inherently improper with the use of fractional subscripts, they do acknowledge that such usage may be confusing for those not accustomed to such usage.

The Applicants respectfully contend that the formula III, $Cu_zA_xB_y$, as now recited in claims 26 and 31 and paragraph [0041], is both consistent with the original disclosure and reflects a somewhat more conventional representation of the structure of the cupric compounds encompassed by the claims. The Applicants further suggest that formula I is equivalent to formula III in which the Cu subscript, *i.e.*, z, is limited to 1. The Applicants respectfully contend that formula III encompasses both $Cu(OH)_2$ (Example 6), z=1, and $Cu_2(OH)$citrate (Example 8), z=2, with the formula III subscripts simply corresponding to the integers used in the conventional formulaic representation of the particular cupric compound(s). The Applicants respectfully submit, therefore, that formula III is fully supported by and consistent with the original disclosure and contend that the amendments indicated above do not constitute the introduction of new matter.

With respect to claims 28, 29, the Applicants respectfully contend that the "antecedent basis" rejections are inappropriate in that the Markush groups are properly delineating groups of acceptable oxidizers and bases that need not have been previously recited verbatim. The Applicants direct the Examiner to paragraph [0043], in which both ozone and hypochlorites are listed as possible oxidizers and paragraph [0047], in which weak bases are listed.

With respect to claim 26-30, the Applicants respectfully submit that anion A need only be capable of reacting with a cupric ion, with or without another anion, to form a cupric compound or a basic salt of a cupric compound that is no more than slightly soluble in water. As noted in paragraph [0042], anion A "can," not *must*, be one of the listed anions, each of which can satisfy formulas I and II, but there is no indication in the specification that anion A must be one of the listed anions. The Applicants respectfully contend, therefore, that while the listed anions may be preferred, there is no indication that the invention is so limited.

With respect to claims 1-8, 17, 19, 21 and 26-30, the Applicants respectfully maintain that, as indicated above, the basic salts of "soluble" cupric compounds formed by raising the pH of the aqueous solution are insoluble or only slightly soluble and may thus be used to form stable cupric colloids according to the invention. Thus, while certain of the anions listed in paragraph [0042] may form soluble cupric compounds, when processed according to the claims, a colloidal solid may, indeed, be formed that includes those anions as described in Example 8.

The Applicants respectfully request, therefore, that these rejections be withdrawn.

Rejections under 35 U.S.C. §§ 102(b) or 103(a)

Claims 1-8 stand rejected under 35 U.S.C. §§ 102(b) or 103(a) as anticipated by, or in the alternative, obvious over Brasch (U.S. Patent No. 4,681,630); claims 1–8, 17, 18, 23 and 26 over WO 96/10918; claims 1–8, 17, 19, 21 and 23–25 over Casale (Abstract); and claims 1–8 over Paal et al. (Abstract) or Bannigan, Jr. (U.S. Patent No. 4,253,843). In particular, the Examiner asserts that each of the cited references teach a colloidal cupric compound of the present invention. The Applicants respectfully traverse this rejection.

The term "colloid" with respect to copper compounds is conventionally used, somewhat imprecisely, to describe compositions in which a copper compound is initially suspended in a continuous liquid phase, but which remains subject to relatively rapid precipitation. As a result and as reflected in Brasch, conventional copper "colloids" tend to use thickening agents such as gelatin to provide compositions that are "sufficiently stable," *e.g.*, will not rapidly precipitate. For example, some colloidal copper compounds separate from the solution within hours and some copper compounds take days to separate and thus are more properly characterized as suspensions. However, by the time consumers receive the "colloid" solution, the suspension has separated to a clear supernatant with the solid phase being present only as a sedimented solid on the bottom. As a result, the consumers have to shake the product before each use to recreate a suspension.

Conversely, colloidal cupric compounds according to the present invention are formed at dimensions on the order of 1 μm or less and, as a result of the purification of the aqueous cupric solution, do not exhibit the flocculation or aggregation inherent in the prior art "colloidal" compositions. Thus, the inventive colloidal cupric compounds demonstrate an unexpectedly degree of stability that is neither taught, suggested nor achieved by the applied

prior art references and render them more useful for certain applications, particularly as topical fungicides, as a result of the relatively small dimensions of the particles.

The Applicants respectfully request, therefore, that these rejections be withdrawn.

The Applicants further note that Brasch actually teaches away from the use of copper chloride and copper citrate in the production of high quality colloids. The Applicants respectfully suggest, therefore, that one of ordinary skill would expect that the results obtained using these copper compounds would be superior to the results obtained from Brasch's preferred compounds. The Applicants respectfully maintain, therefore, that the prior art references lack the necessary degree of disclosure, teaching and/or suggestion that would have allowed one of ordinary skill in the art to the present method and the resulting cupric compound colloids.

The Applicants respectfully request, therefore, that these rejections be withdrawn.

CONCLUSION

In view of the above remarks and amendments, the Applicants respectfully submit that each of the pending claims is allowable over the applied prior art references. A notice to that effect is respectfully requested.

If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to contact the undersigned.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge any underpayment or non-payment of any fees required under 37 C.F.R. §§ 1.16 or 1.17, or credit any overpayment of such fees, to Deposit Account No. 08-0750, including, in particular, extension of time fees.

Very truly yours,

HARNESS, DICKEY & PIERCE, P.L.C.

By: _____

John A. Castellano
Reg. No. 35,094

P.O. Box 8910
Reston, VA 20195
(703) 668-8000

JAC/GPB